

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A radio wave propagation characteristics estimating system for determining a frequency transfer function of a radio wave by estimating radio wave propagation characteristics, the system comprising: on the basis of

a ray tracing unit to trace technique of tracing courses of a plurality of rays approximating
[[the]]a radio wave radiated from a transmission point and detected detecting the rays arriving at
a reception point; said system comprising:

a frequency determination unit operable to divide a spectrum of a radio signal of a target
radio communication system into a plurality of bands and to determine a frequency transfer
function of a predetermined frequency of each of said plurality of bands by said radio wave
propagation characteristics estimation, said predetermined frequency of each of said plurality of
bands being used as a frequency of the radio wave radiated from said transmission point; and

an estimation unit operable to estimate to combine the determined frequency transfer
functions of said plurality of bands for estimating the radio wave propagation characteristics of
said target radio communication system on the basis of the combined frequency transfer
functions determined by said frequency determination unit.

2. (currently amended) The system according to claim 1, wherein said estimation unit
~~estimates said radio wave propagation characteristics by~~

filtering filters the frequency transfer functions determined by said frequency
determination unit with band pass filters having pass bands respectively corresponding to the
plurality of bands obtained by dividing the spectrum, and

arranging arranges and synthetically combining combines the filtered frequency transfer
functions on a frequency axis.

3. (currently amended) The system according to claim 1, wherein said frequency determination unit comprises an acquiring unit adapted to

acquire information on the arrival delay time and intensity of each of the rays arriving at said reception point for each of said predetermined frequencies by estimating said radio wave propagation characteristics, and

~~determines~~ determine the frequency transfer function for each of said predetermined frequencies on the basis of the information acquired by said acquiring unit ~~third means~~.

4. (previously presented) The system according to claim 3, wherein said acquiring unit acquires information for each of said predetermined frequencies by tracing the courses of said plurality of rays only once.

5. (currently amended) The system according to claim 3, wherein said information ~~acquiring unit~~ is provided for each of a plurality of directions ~~[[to]]~~ in which the rays are radiated from the transmission point so as to ~~carry out~~ determine the frequency transfer functions in parallel.

6. (currently amended) The system according to claim 1, wherein ~~[[the]]~~ a number of a plurality of said predetermined frequencies is set on ~~[[the]]~~ a basis of ~~[[the]]~~ an extent of said spectrum of radio signal.

7. (currently amended) The system according to claim 6, wherein the extent of said spectrum of radio signal is ~~[[the]]~~ a bandwidth of said spectrum of radio signal.

8. (currently amended) The system according to claim 6, wherein the extent of said spectrum of radio signal is ~~[[the]]~~ a band distribution of said spectrum of radio signal.

9. (currently amended) The system according to claim 6, wherein the extent of said spectrum of radio signal is ~~[[the]]~~ a bandwidth of said spectrum of radio signal having ~~power over the~~ a power smaller than ~~[[the]]~~ a largest power of the spectrum by a predetermined value.

10. (currently amended) A radio wave propagation characteristics estimating method for determining a frequency transfer function of a radio wave by estimating radio wave propagation characteristics, the method comprising: ~~on the basis of a ray tracing technique of~~

tracing courses of a plurality of [[the]] rays approximating [[the]] a radio wave radiated from a transmission point and detected ~~detecting the rays~~ arriving at a reception point; ~~said method comprising:~~

dividing a spectrum of a radio signal of a target radio communication system into a plurality of bands;

determining a frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being used as a frequency of the radio wave radiated from said transmission point; and

combining the determined frequency transfer functions of said plurality of bands for estimating the radio wave propagation characteristics of said target radio communication system on the basis of the combined frequency transfer functions determined.

11. (currently amended) The method according to claim 10, wherein said ~~radio wave propagation characteristics are estimated in said estimating operation by combining step~~ includes:

filtering the frequency transfer functions determined in said dividing step ~~operation~~ with band pass filters having pass bands respectively corresponding to the plurality of bands obtained by dividing the spectrum, and

arranging and synthetically combining the filtered frequency transfer functions on a frequency axis.

12. (currently amended) The method according to claim 10, wherein said dividing ~~operation step~~ further comprises:

acquiring information on the arrival delay time and intensity of each of the rays arriving at said reception point for each of said predetermined frequencies by estimating said radio wave propagation characteristics, and

determining the frequency transfer function for each of said predetermined frequencies on the basis of the information acquired in said acquiring of information step is determined in said dividing operation.

13. (currently amended) The method according to claim 12, wherein said information is acquired for each of said predetermined frequencies by tracing the courses of said plurality of rays only once in said acquiring of information step.

14. (currently amended) The method according to claim 12, wherein said acquiring of information is provided for each of a plurality of directions [[to]]in which the rays are radiated from the transmission point so as to carry out determine the frequency transfer functions in parallel.

15. (currently amended) The method according to claim 10, wherein [[the]]a number of a plurality of said predetermined frequencies is set on [[the]]a basis of [[the]]an extent of said spectrum of radio signal.

16. (currently amended) The method according to claim 15, wherein the extent of said spectrum of radio signal is [[the]]a bandwidth of said spectrum of radio signal.

17. (currently amended) The method according to claim 15, wherein the extent of said spectrum of radio signal is [[the]]a band distribution of said spectrum of radio signal.

18. (currently amended) The method according to claim 15, wherein the extent of said spectrum of radio signal is [[the]]a bandwidth of said spectrum of radio signal having power over the a power smaller than [[the]] a largest power of the spectrum by a predetermined value.

19. (currently amended) A program product embodied on a storage portion of a computer and comprising code that, when said program product is executed, cause causes said computer to perform a radio wave propagation characteristics estimating method, said method

~~determining to determine~~ the frequency transfer function of the radio wave by estimating the radio wave propagation characteristics, the method comprising: ~~on the basis of a ray tracing technique of~~

tracing [[the]] courses of a plurality of [[the]] rays which approximate ~~to the~~ a radio wave radiated from a transmission point and ~~detected~~ ~~detecting the rays~~ arriving at a reception point; ~~said method comprising:~~

a first step for dividing the spectrum of a radio signal of a target radio communication system into a plurality of bands and determining the frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being used as a frequency of the radio wave radiated from said transmission point; and

a second step of combining the determined frequency transfer functions of said plurality of bands for estimating the radio wave propagation characteristics of said target radio communication system on the basis of the combined frequency transfer functions ~~determined by~~ ~~said first step~~.

20. (currently amended) A processor-readable medium incorporating instructions configured to cause a computer to perform a radio wave propagation characteristics estimating method, ~~said method for~~ determining a frequency transfer function of the radio wave by estimating radio wave propagation characteristics, the method comprising: ~~on the basis of a ray tracing technique of~~

tracing courses of a plurality of the rays approximating the radio wave radiated from a transmission point and ~~detected~~ ~~detecting the rays~~ arriving at a reception point; ~~said instructions comprising:~~

dividing instructions configured to divide a spectrum of a radio signal of a target radio communication system into a plurality of bands and to determine a frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being used as a frequency of the radio wave radiated from said transmission point; and

instructions configured to estimate combining the determined frequency transfer

functions of said plurality of bands for estimating the radio wave propagation characteristics of said target radio communication system on the basis of the combined frequency transfer functions determined.